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EXAMINER

KUMAR, PANKAJ

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

2631

DATE MAILED: 08/07/2003

21

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Applica No.

09/264,085

Applicant(s)

ABDELILAH ET AL.

Examiner

Pankaj Kumar

Art Unit

2631

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 24 June 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-3,6-14,16-22 and 24-30 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1-3,6-11 and 28-30 is/are allowed.
- 6) ☒ Claim(s) 12,13,17,19-21,25 and 27 is/are rejected.
- 7) ☒ Claim(s) 14,16,18,22,24 and 26 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## **DETAILED ACTION**

### ***Response to Arguments***

1. The rejection of claim 24 under 35 USC 112 2<sup>nd</sup> paragraph is withdrawn. The remainder of applicant's arguments are moot in view of the new grounds of rejection.

### ***Response to Amendment***

#### ***Claim Rejections - 35 USC § 102***

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 20, 25 and 27 are rejected under 35 U.S.C. 102(e) as being anticipated by McDonough USPN 5,778,024. McDonough shows figures and logic diagrams that may be coded.
4. As per claim 20, (Twice Amended) A computer program product for demodulating, in a receiver, n data signal transmitted from a digital source at a network sampling rate that is synchronized with a network clock, comprising: a computer readable storage medium having computer readable code means embodied therein, the computer readable code means comprising: first logic configured to sample the data signal to produce digital samples at a first local sample rate that is synchronized with a local clock; second logic configured to generate first and second integers in response to a sampling index signal using a time converter; third logic configured to

Art Unit: 2631

interpolate the digital samples in response to the first integer to produce first and second estimates for each of the digital samples, the third logic configured to interpolate comprising: fourth logic configured to use a polyphase interpolator to produce the first and second estimates; fifth logic configured to interpolate the first and second estimates in response to the second integer to produce interpolated digital samples having a second local sample rate that is synchronized with the network clock, the second logic configured to interpolate comprising: sixth logic configured to use a linear interpolator to produce the interpolated digital samples; seventh logic configured to equalize the interpolated digital samples to produce equalized digital samples; and eighth logic configured to decode the equalized digital samples to generate detected symbols therefrom (McDonough shows figures and logic diagrams that may be coded.

Remainder discussed above and in prior actions).

5. As per claim 25, (Amended) A computer program product as recited in Claim 20 further comprising ninth logic configured to identify a signaling alphabet, the eighth logic configured to decode being responsive to the logic configured to identify (McDonough shows figures and logic diagrams that may be coded. Remainder discussed above in prior actions).

6. As per claim 27, a computer program as recited in claim 20, wherein the detected symbols are pulse code modulation (PCM) codewords (McDonough shows figures and logic diagrams that may be coded. Remainder discussed above and in prior actions).

### ***Claim Rejections - 35 USC § 103***

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 2631

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 12, 13, 17, 19, 21 are rejected under 35 U.S.C. 103(a) as being anticipated by McDonough USPN 5,778,024 in view of Hodgkiss USPN 4,901,333.

9. Regarding claim 12, McDonough in view of Hodgkiss teach a method for demodulating, in a receiver, a data signal transmitted from a digital source at a network sampling rate that is synchronized with a network clock (inherent), comprising the steps of: sampling the data signal to produce digital samples at a first local sample rate that is synchronized with a local clock (McDonough fig. 2: 110); generating first and second integers in response to a sampling index signal using a time converter (McDonough paragraph 49: "The resulting energy estimates are sampled every 80 ms by (400:1) decimation elements 641, 651 and 659."; 621) (decimator is the time converter; x is the sampling index signal in fig. 6 with  $1/400x$ ; first and second integers are the serial outputs of any one of 621, 641, 651, 659); interpolating (McDonough fig. 5C: 608 is interpolating and fig. 5C is element 550 which is shown in fig. 5A which is shown in fig. 5A to be after fig. 6's element 490) the digital samples in response to the first integer to produce first and second estimates for each of the digital samples (inherent if I and Q samples existed) using a polyphase interpolator (McDonough element 608 works on multiple phases of the signal and thus is polyphase); interpolating (McDonough fig. 5A: 46, 406, 416; fig. 5A, 5B: 426, 592) the first and second estimates (McDonough fig. 5A: two serial outputs of 550) in response to the second integer (McDonough fig. 5A, 6: the second integer output in series from any one of 621, 641, 651, 659 goes into fig. 5A: 46; fig. 5A, 5B: 426, 592 via other components) to produce interpolated digital samples having a second local sample rate (McDonough fig. 5C which is part

Art Unit: 2631

of fig. 5A has 3x interpolation while 460 in fig. 5A has 2:5 interpolation) that is synchronized with the network clock (McDonough fig. 1: external timing) using a linear interpolator (McDonough fig. 5A: 406, 416 are linear filters which when combined with the interpolation produce linear interpolation); equalizing (McDonough fig. 4: 338, 348) the interpolated digital samples to produce equalized digital samples (McDonough fig. 4) using an adaptive fractionally spaced decision feedback equalizer (not in McDonough. Hodgkiss teaches this in fig. 1 with the adaptive equalizer which has decision feedback after interpolator. It is inherent for an equalizer to have fractionally spaced taps. It would have been obvious to one skilled in the art at the time of the invention to modify McDonough equalizer with the decision feedback adaptive equalizer of Hodgkiss since it would result in a better performing and more efficient system); and decoding the equalized digital samples to generate detected symbols therefrom (McDonough fig. 4: 346, 350, fig 5C: 292, fig. 5A, fig. 6).

10. As per claim 13, McDonough in view of Hodgkiss teach the limitation since there are no restrictions in the value of  $p/q$  and thus there is no particular spacing that will not meet the condition. Hence, Hodgkiss teaches in fig. 1, the adaptive equalizer which has decision feedback after interpolator. It is inherent for an equalizer to have fractionally spaced taps.

11. Regarding claim 17, a method as recited in Claim 12, further comprising the step of identifying a signaling alphabet (McDonough “code excited linear prediction” – CELP, the input into the decoder is the signaling alphabet that is identified) for use in the decoding step to generate the detected symbols (McDonough output of decoder).

12. Regarding claim 19, a method as recited in Claim 12, wherein the detected symbols are pulse code modulation (PCM) codewords (inherent for modulated digital signals to be PCM).

Art Unit: 2631

13. As per claim 21, McDonough in view of Hodgkiss teach the limitation since there are no restrictions in the value of  $p/q$  and thus there is no particular spacing that will not meet the condition. Hence, Hodgkiss teaches in fig. 1, the adaptive equalizer that has decision feedback after interpolator. It is inherent for an equalizer to have fractionally spaced taps. McDonough shows figures and logic diagrams that may be coded.

***Allowable Subject Matter***

14. Claims 1, 2, 3, 6-11, 28-30 are allowed as indicated in a prior action.

15. Claims 14, 16, 18, 22, 24, 26 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter:

16. Claims 14, 16, 18 and 26 are objected to as recited in an earlier action.

17. As per claim 22, (Amended) A computer program product as recited in Claim 20, further comprising: ninth logic *configured to maintain the synchronization between the second local sampling rate and the network clock via the sampling index signal* (not in McDonough).

18. As per claim 24, *configured to receive at an input of the echo canceller transmit symbols from the transmitter that have a third local sample rate that is synchronized with the local clock* (not in McDonough).



Art Unit: 2631

***Conclusion***

19. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Pankaj Kumar whose telephone number is (703) 305-0194. The examiner can normally be reached on Mon, Tues, Thurs and Fri after 8AM to after 6:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chi H. Pham can be reached on (703) 305-4378. The fax phone numbers for the organization where this application or proceeding is assigned are (703) 872-9314 for regular communications and (703) 872-9314 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 305-4700.

PK  
August 1, 2003

  
**DON N. VO**  
**PRIMARY EXAMINER**